



ENVIRONOMICS

AUGUST 2009

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Director's Note

With the unemployment effects of the global financial crisis now being experienced around the world, the reputation of economics as a discipline has been somewhat tarnished. Some have seen the onset of recession as an ideal time to denounce economics as the cause of the grief being currently experienced.

Environmental economists are used to this type of rhetoric in that economics is often blamed for various forms of environmental degradation.

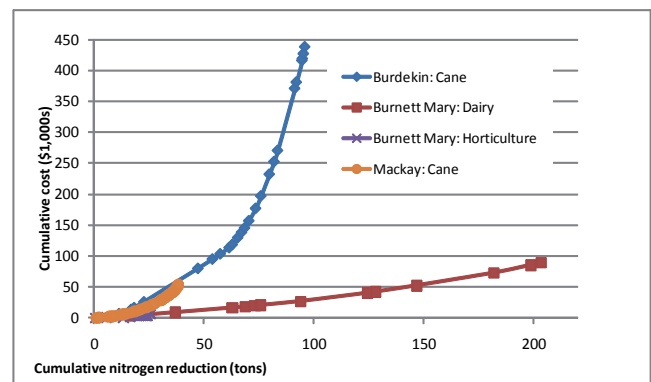
Criticism of economics in both contexts is a bad case of "shooting the messenger". The danger is that the messenger is so badly wounded that it is unable to continue to deliver warnings as to policy pitfalls as well as sign posts toward more efficient resource use options.

If there is one valid criticism of the profession in both the macro/finance and in the environment/resource realms it is that the message being delivered is frequently muted. For instance, the warnings sounded regarding the establishment *cont'd Page 2*

Costs of reducing agricultural emissions into the Great Barrier Reef lagoon - John Rolfe, CQU

John Rolfe has recently been a guest speaker at a preconference on Water Economics in Amsterdam. The event was part of the annual European Association of Environmental Resource Economics conference. In his address, John presented some of the review work that he and Jill Windle have been carrying out on water quality tenders in the Great Barrier Reef. This research is being funded through their involvement with the nationally funded Environmental Economics Research Hub, and involved an analysis of four trial water quality tenders that have been performed with farmers to reduce emissions of sediment, nutrients and pesticides.

The key results that John presented identified that there were large variations in the costs for farmers to reduce water quality impacts from agriculture. These costs varied across farmers and types of emissions, as well as across industries and regions in the catchments of the Great Barrier Reef. The figure below shows the large variations in cost-effectiveness of four programs to reduce nitrogen emissions, with proposals from the dairy industry in the Mary River delivering larger and more cost-effective improvements



than other industry programs. Selecting more cost-effective proposals can improve the efficiency of many programs by several times.

The implications of the results are that the effectiveness of government funding in the Reef Rescue package and other programs can be significantly improved by focusing on the cost effectiveness of the outputs gained under each project. As well the results can help policy makers to set benchmark limits for the cost of reducing sediment, nutrient and pesticide reductions.

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and privatisation of Freddie Mac and Fannie Mae as sources of housing finance to those who couldn't afford it went largely unheard and the US toxic assets debacle was initiated.

So a key role in the EERH is to provide a vehicle for Australia's environmental economists to release their messages. To this effect, the Hub's website (http://www.crawford.anu.edu.au/research_units/eeerh/index.php) now features almost 40 research reports. Plain-English abstracts for these reports are also available on the website above (under the publications tab). A new series of Policy Briefs is also about to be launched. Furthermore, the Hub is supporting the forthcoming AARES National Symposium entitled "Invasive Species and Biodiversity" (http://www.aares.info/files/2009_symposium_brochure.pdf)



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European Association of Environmental & Resource Economists, Marit Kragt, ANU



Three of our hub-members attended the 17th Annual conference of the European Association of Environmental and Resource Economists in June.

Both **John Rolfe** and **Marit Kragt** presented papers at the Preconference on Water Economics. The 12 presentations during this pre-conference were specifically aimed at policy-relevant topics like international river basin cooperation, integrated modelling, water resource valuation and pricing. John talked about 'Pricing Water Quality Improvements with Market Based Instruments' (see elsewhere in this newsletter), while Marit presented her work on 'Integrated Hydro-Economic Modelling: Experiences from an Australian Catchment'. During the main conference, **Ralf Steinhauser** provided new insights into manager's personal preferences in corporate environmental and social performance in his paper 'Principals vs. principles: What do managers do when governance is

slack?' **Marit** presented a paper on 'Framing and anchoring in Choice Experiments' that is part of her PhD research with Jeff Bennett.

The EAERE conference attracted nearly 800 people from all over the world. With 18 parallel sessions over three days, it was hard to choose between the many interesting papers. Fortunately, there was plenty of time for networking during the opening and closing drinks, a canal-tour and conference dinner. Hopefully, we will see many hub presentations at next year's World Conference of Environmental and Resource Economists in Montreal

New Research - Exploring climate change mitigation

Peter Wood - ANU

Dr Peter Wood - member of the ANU Climate Change Institute



In April this year, Peter started working on a new EERH subproject "Australia and international climate change mitigation commitments: applying game theoretic approaches", as part of the climate change analysis theme. The project examines what a relatively small emitter, such as Australia, can do to increase the likelihood of a strong global mitigation outcome.

Peter received his PhD in mathematics from Flinders University in 2006, and has worked on a number of different mathematical problems since then. For the two years prior to commencing work on the sub-project, Peter worked as a Postdoctoral Fellow at the ANU Department of Applied Mathematics, on the topology of 2-dimensional and 3-dimensional images. Peter has been actively involved in the climate debate since the Stern Review was released in 2006, and has made submissions to inquiries including the Garnaut Review, the Carbon Pollution Reduction Scheme Green Paper, and Senate committees. Peter also blogs on climate policy at the blog climatedilemma.com.

A significant barrier to strong climate mitigation is the difficulty in achieving international cooperation. Countries have strong incentives to free-ride on mitigation actions of others. An international agreement is a possible approach to address this problem, but the negotiating process is difficult and compliance is uncertain. The subproject will apply techniques from game theory to analyse how Australia should bargain for a desirable outcome (such as an appropriate stabilisation target) in international climate negotiations, and how the prospects for strong mitigation can be improved. One promising area of investigation is the application of implementation theory, modelling the bargaining process as a game.



Managing less water in the Murray Darling Basin – Qiang Jiang, ANU



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Qiang Jiang is a PhD student in the Australian National University since 2007. His thesis is about the water management in the Murray Darling Basin and funded by Environmental Economics Research Hub. The river systems in Murray-Darling Basin (MDB) show signs of stress and their fate are uncertain as the consequence of climate change, increasing growth in water diversions and salinity problem. The Australian government plan to buy back the water entitlement from irrigators and the public are demanding to minimize the economic loss of the water buy back. Qiang's study shows targeted water acquisitions in low value regions and crops are better than a pro-rata buyback. Qiang is identifying those low value regions and crops in the Murray Darling Basin.

Qiang has an interdisciplinary background with a Bachelor of Economics from Guangxi University, Master of Business Information System from University of Wollongong, and four year work experience from the land and water division of CSIRO. In 2006 Qiang has received an award from the Chinese Government to recognise Qiang's work in a revolutionary decision support system for agricultural future exchange and his pioneer role in this field. It acknowledges his work for the Wealth from Oceans Flagship in examining changes to soil nitrogen in water, as well as the benefits of his climate forecast value analysis work to Australia's farmers and the environment.

Introducing Abbie McCartney UWA Divergence project

Abbie McCartney will be joining the EERH project 'Divergence between Community and Expert Valuation of Ecosystems' as a research associate for the next 12 months. Abbie will make a valuable contribution to the project through her knowledge of the choice modelling technique and experience from her ongoing PhD research on a related topic.



Abbie McCartney, the newest member of the UWA team

Abbie's PhD research 'The Policy Relevance of Choice Modelling: An Application to the Ningaloo and Proposed Capes Marine Parks' explores similar themes of expert and public value divergence, and the impacts of management processes on preference formation. Preliminary results from this study indicate that both the inclusion of management process in the attribute definition and varying the level of attribute information provided to public respondents have significant effects on preferences.

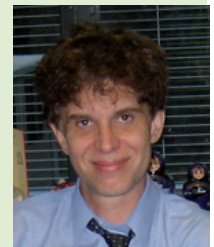
In the past, Abbie has been involved in other non-market valuation studies including a collaborative project using choice modelling to examine willingness to pay for reduced risk of contracting mosquito borne diseases, and her honours thesis which examined the social value of seascapes in a WA marine park. She has also gained broader experience in the field of agricultural and resource economics working for a private consultancy.

'I am looking forward to working on a project of this nature – with the ability to extend upon, and draw from, the complementary features of my PhD research', Abbie said.

Focus on Biosecurity

Tom Kompas,
ANU

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Biosecurity is an important component of the Environmental Economics Research Hub, with projects ranging from the biodiversity threat to an invasive species to the environmental valuation of potential damages from an entry and spread of a harmful pest or disease. One key EERH project, lead by Professor Tom Kompas, is to develop generic optimal quarantine and local surveillance models against principal threats, with case studies including red imported fire ants, cane toads, papaya fruit fly and crazy ant incursions on Christmas Island and in Northern Queensland.

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The point is to find the correct allocation of expenditures to minimize the cost of border control, given all of the potential damages that may occur from an invasive, and to ensure the most economically effective 'early detection' of an invasive through cost-effective local surveillance programs, such as traps for flies and blood testing regimes for animal and human health diseases.

These EERH projects have led to two key developments: First is the National Symposium on 'Invasives and Biosecurity' (see details right), bringing together key policy makers and researchers in biosecurity, with a focus on appropriate policy actions against invasive species and the economics of biosecurity. Key individuals in biosecurity, at various levels of government and from a number of major research institutions are attending, with the expectation of forming a permanent engagement between researchers, policy makers and stakeholders on biosecurity issues. Second, EERH activities have generated a new centre, which will be officially launched at the Symposium: the Australian Centre for Biosecurity and Environmental Economics, or AC-BEE. This centre will be a permanent addition to the Crawford School of Economics and Government at the Australian National University, bringing together key researchers on the economics of biosecurity both in Australia and internationally.

2009 AARES Annual Symposium - Invasive species and biosecurity

A two day program has been put together comprising presentations from senior policy makers from the relevant Commonwealth, State and New Zealand government agencies as well as leading research economists and bio-physical scientists.

You are cordially invited to participate in what promises to be a highly informative Symposium on an issue that is a top policy priority.

Biosecurity and policy actions to protect plant and animal health and the environment are among the highest concerns of government. This Symposium brings together key policy makers and researchers in biosecurity, with a focus on appropriate policy actions against invasive species and the economics of biosecurity. The event will allow all attendees to engage with key individuals in biosecurity, at various levels of government and from a number of major research institutions. The Symposium will also launch a new research centre of leading economists and scientists working on the economics of biosecurity, the Australian Centre for Biosecurity and Environmental Economics (AC-BEE), at the Crawford School of Economics and Government at the Australian National University.

See www.aares.info/symposia for more information.

Keynote speakers include:

- Rob Delane (DAFF)
- Tom Aldred (DAFF)
- Mike Cole (DAFF)
- Nhu Che (ABARE)
- Pieta-Rae Laut (DEWHA)
- Tom Kompas (Australian National University)
- Jeff Bennett (Australian National University)
- John Rolfe (Central Queensland University)
- Ananda Ghose (Agriculture Western Australia)
- Brian Bell (Nimo Bell NZ)
- David Cook and Shuang Liu (CSIRO)
- Oscar Cacho (University of New England)
- Samantha Setterfield (Charles Darwin University)
- Michael Ward (Australian National University)
- Chris Baddeley (Ministry of Agriculture and Forestry NZ)
- Ron Glanville (Queensland Dept of Primary Industries)

Location: University House, The Australian National University, Canberra

Date: 10 - 11 September 2009

HUB THEME LEADER CONTACTS

Theme A.

Establishing viable markets to achieve environmental goals
Prof Quentin Grafton,
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Theme B.

Climate change analysis
Dr Frank Jotzo
Research School of Asia and Pacific Studies ANU
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Theme C.

Advancing Australia's capability for social and economic analysis of environmental issues at the regional scale
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Theme D.

Valuing environmental goods and services
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